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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
ALLEN, DENISE S

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 07/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/077,691	Applicant(s) UNRATH ET AL.	
	Examiner Denise S Allen	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover she t with the correspondence address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 February 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,6 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

Claims 24 – 27 are objected to because of the following informalities: the limitation "the positioner" (claim 24 line 7) lacks antecedent basis because it has not been previously recited in claim 24. Suggested correction: add the limitation "using a positioner" after the limitation "the coordinate position command" in line 5. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24 – 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Cutler et al (US 5,751,585).

Regarding claim 24, Cutler et al teaches a means (Figure 2) for directing a laser beam (reference 60) toward a target location on a workpiece (reference 62) in response to a target location coordinate position command (from reference 72), comprising: a means for positioning the workpiece and the laser beam relative to one another in response to the coordinate position command (references 56 and 58); a means for producing first and second position signals indicative of an actual coordinate position of the positioner (reference 122, column 9 lines 54 – 56); a means for comparing the coordinate position command and the first and second position signals to produce first and second error signals indicative of a difference between the coordinate position command and the actual coordinate position (reference 90, column 9 lines

56 – 59); a means for producing from the first error signal a first position correction signal (reference 88, Figure 4 reference 104, and through references 82 and 84); a means for providing a first steering mirror inherently having a pivot point (reference 110); a means for locating a focusing lens having an entrance pupil between the first steering mirror and the workpiece such that the entrance pupil is located at or near the pivot point (reference 114); and a means for actuating the first steering mirror in response to the first position correction signal for deflecting the laser beam toward the target location on the workpiece (reference 88 and the path of reference 60).

Regarding claim 25, Cutler et al teaches a means for producing from the second error signal a second position correction signal (Figure 4 reference 106); a means for providing a second steering mirror (reference 112); and a means for actuating the second steering mirror in response to the second position correction signal for deflecting the laser beam (reference 106) about the pivot point of the first steering mirror in sufficiently small deflection amounts to maintain a laser beam spot size and shape suitable for use in the semiconductor link processing application.

Regarding claim 26, Cutler et al teaches at least one of the first and second steering mirrors includes a galvanometer actuator (column 8 line 66 – column 9 line 3).

Regarding claim 27, Cutler et al teaches at least one of the first and second steering mirrors is a single-axis steering mirror (references 110 and 112).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cutler et al in view of Toda (US 5,295,014).

Regarding claims 1, 10, 16, and 23, Cutler et al teaches an apparatus (Figure 2) for directing a laser beam (reference 60) toward a target location on a workpiece (reference 62) in response to a target location coordinate position command (from reference 72), comprising: a positioner (references 56 and 58) positioning the workpiece and the laser beam relative to one another in response to the coordinate position command; first and second position sensors (reference 122) coupled to the positioner for producing first and second position signals indicative of an actual coordinate position of the positioner (column 9 lines 54 – 56); first and second summing junctions (reference 90) comparing the coordinate position command and the first and second position signals and producing first and second error signals indicative of a difference between the coordinate position command and the actual coordinate position (column 9 lines 56 – 59); a first steering mirror controller (reference 88 and Figure 4 reference 104) coupled to the first error signal for producing a first position correction signal (through references 82 and 84); and two one-axis steering mirrors (Figure 4 references 110 and 112) responsive to the first position correction signal for receiving the laser beam and deflecting the laser beam toward the target location on the workpiece (path of reference 60). Cutler et al does not teach a two-axis steering mirror responsive to the first position correction signal for receiving the laser beam and deflecting the laser beam toward the target location on the workpiece.

Toda teaches both pairs of one-axis steering mirrors (Figures 5 and 6) and a single two-axis steering mirror (Figures 3 and 4) used to deflect a laser beam toward a target location. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the single two-axis steering mirror of Toda in place of the pair of one-axis steering mirrors of Cutler et al in order to reduce the number of parts in the beam steering mirror assembly.

Regarding claims 2, 10, 17, and 23, Cutler et al teaches a second steering mirror controller (Figure 4 reference 106) coupled to the second error signal for producing a second position correction signal, and in which the two-axis steering mirror is further responsive to the second position correction signal for receiving the laser beam and deflecting the laser beam toward the target location on the workpiece.

Regarding claims 3 and 18, Cutler et al teaches the coordinate position command includes information for positioning the positioner to respective X-axis and Y-axis orthogonal coordinate locations (column 5 lines 24 – 40).

Regarding claims 4 and 19, Cutler et al teaches the first and second error signals conform to a first coordinate system (i.e. Figure 8B) and the two-axis steering mirror is responsive to a second coordinate system (i.e. Figure 8C), and in which the apparatus further includes a coordinate transform generator for converting at least one of the first and second error signals to the second coordinate system (column 12 lines 23 – 62).

Regarding claims 5 and 20, Cutler et al teaches a second steering mirror controller (reference 86) and in which the target location coordinate position command further includes mirror positioning information, the first and second steering mirror controllers positioning the

two-axis steering mirror in response to the mirror positioning information and at least the first position correction signal.

Regarding claims 6 and 21, Cutler et al discloses the steering mirror includes a pivot point.(Figure 4 where reference 60 intersects references 110 and 112), and the apparatus further includes a focusing lens (reference 114) inherently having an entrance pupil, and in which the focusing lens is disposed between the steering mirror and the workpiece such that the entrance pupil is at or near the pivot point.

Regarding claim 7, Cutler et al teaches the steering mirror is positioned by at least one piezo electric actuator (column 8 line 66 – column 9 line 3).

Regarding claim 8, Cutler et al teaches the steering mirror is positioned by at least one voice coil actuator (column 8 line 66 – column 9 line 3).

Regarding claims 9 and 22, Cutler et al teaches the positioner scans the workpiece and the laser beam relative to one another in a second axis direction in response to a series of the coordinate position commands while the two-axis steering mirror is responsive to a series of the first position correction signals for receiving the laser beam and deflecting the laser beam toward a set of the target locations on the workpiece (Figures 8A – 8E).

Regarding claim 11, Cutler et al discloses the workpiece includes an integrated memory circuit and in which the target location includes a severable link for removing a defective memory cell (column 1 lines 20 – 35).

Regarding claim 12, Cutler et al discloses the workpiece includes an electronic circuit element that is trimmed to a predetermined performance characteristic by the laser beam (column 1 lines 20 – 35).

Regarding claim 13, Cutler et al teaches the positioner includes stages that are arranged in a stacked configuration (reference 56 is stacked on reference 58).

Regarding claim 14, Cutler et al teaches the positioner includes stages that are arranged in a split-axis configuration (reference 56 is on the X-axis and reference 58 is on the Y-axis).

Regarding claim 15, Cutler et al teaches the positioner includes a planar positioning stage (references 56 and 58).

Double Patenting

Applicant is advised that should claims 1, 2, 16, and 17 be found allowable, claims 10 and 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise S Allen whose telephone number is (703) 305-7407. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (703) 305-0024. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Denise S Allen
Examiner
Art Unit 2872

dsa
July 9, 2003

Audrey Chang
Primary Examiner
Technology Center 2800